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*Approved draft. Text has been approved for publication (JPW 22 Jun 90) but will need to be reduced to about 1900 words before production as a 6-panel gatefold. Presently 2850. — CH.*

# The VFT's origins

The idea for an Australian high-speed train arose from an unfulfilled hope.

Dr Paul Wild, Chairman of CSIRO, was one of many people who had their expectations raised by a successful advertising campaign. In 1983, the New South Wales State Rail Authority was offering a "new rail travel experience" in a powerful and comfortable new Express Passenger Train — the XPT — on services radiating from Sydney. On 28 October that year, Dr Wild decided to travel by XPT from his headquarters in Canberra to an afternoon appointment at Ryde in Sydney.

Paul Wild admits to more than a passing regard for railways. He grew up in England near the Southern Railway's London–Brighton line, but confesses to little interest in that "rather dull railway. The electric trains, I must say, bored me stiff." His inspiration in childhood and later was the Great Western Railway — the GWR, widely known as "God's Wonderful Railway" — which served the west of England and Wales. His hero is Isambard Kingdom Brunel, the engineering genius who masterminded the GWR and created engineering masterpieces in marine, bridge and other civil engineering.

Dr Wild recalls why he was looking forward to a fast ride on his first country train journey in three decades: "In the early days of my youth, in the 1930s, the better railways were always pushing to achieve an average speed of 60 miles per hour (97 km/h). That was the magic figure. I had grown up when speed was regarded as the essential thing on the railway — a very important factor when the motor car was becoming more widespread. So I had high hopes for how things had improved."

"My disappointment in the XPT came when I discovered the journey, over all, had the leisurely features of a branch-line train. The much-publicised dash at 160 km/h was very brief. The train stopped at all stations between Canberra and Goulburn; the staff[1] was changed with a complete lack of urgency; and the stay at Goulburn was lengthy. In the end, the journey took 4 hours and 37 minutes — 20 minutes longer than scheduled, at an average speed of 70.6 kilometres per hour. After I flew home that night, I looked up an old reference book. Had the XPT completed the run in an even four hours — a schedule that was soon to be introduced — it would have travelled at the same average speed, 81.6 km/h, as the GWR's London to Bristol Express in 1851."

### *Birth of an idea that stuck*

The next day, Dr Wild wrote to David Hill, then Chief Executive of the NSW State Rail Authority: was there any way in which the CSIRO could contribute with the technical problems of railways and help his trains to run faster? He had in mind an objective of perhaps three hours for a Sydney–Canberra journey, which would beat

1 A cast iron rod of unique pattern taken in the cab as authorisation to be the only train in a particular section of line. As only one staff exists for each section, the "staff-working system" ensures only one train is on the line. This 19th century safety system is very reliable, but is only suited to slower train schedules.

the car and coach times to the centre of the city.

The reply was very positive, suggesting a meeting. On 29 February 1984 Dr Wild, accompanied by Dr Bob Frater and Dr John Lowke, two heads of CSIRO divisions, met in Sydney with Mr Ron Christie — David Hill's deputy — and several of his most senior engineers. The tone of their discussion was cordial, but the three scientists left with the feeling that they were unlikely to go far under the umbrella of the State Rail Authority. The reason was exemplified by a comment by Hill: "Are you talking about speeding up freight trains? Country passenger trains? They're the lowest of our priorities."

### *The concept is developed*

Despite "a feeling of deep gloom," Dr Wild knew the concept was too good to give up. "By February–March 1984, I began to think of the possibilities of a Sydney–Canberra–Melbourne journey of firstly six hours, then progressively shorter. Eventually I fixed on the notion of completing the journey in three hours, which would be highly competitive with airlines. That meant a speed of 350 kilometres an hour — although the world's fastest train in 1983 was the French TGV, which travelled at 270 km/h. Crude calculations suggested that it might just be possible to make a profit, given the prevailing costs, if the line served the national capital as well as the two biggest state capitals. The sharpest curve would have to be very wide — seven kilometres in radius — so an entirely new route would have to be established outside the metropolitan areas."

"The most attractive route seemed to be via Cooma, Orbost and Gippsland. I acquired a complete set of 1:100,000 maps — about two dozen of them — to cover the whole area between Sydney and Melbourne. Then I started to chart a route. I did this usually on my sitting room floor during weekends. I used a saucer, 14 centimetres in diameter, to draw the 7 km radius curves. Larger china plates came in handy for gentler curves. The biggest challenge was to find a way through rugged country from Bombala to Orbost."

"When I had drawn up a map that I was happy with, I showed it to John Dunn, head of the CSIRO Building Branch. He was enthused with the idea, and suggested I call in two CSIRO staff members: Dr John Brotchie, who has an excellent reputation for his urban, transport and demographic studies, and Dr John Nicolson — an agricultural scientist with an encyclopaedic knowledge of railways and technical knowledge gained as an engineering officer in the Air Force Reserve. Both were involved in the study by early April."

"I also showed the map to a good friend, Sir Ian McLennan — former Chairman of BHP — who put me in touch with David Box, of BHP Engineering. John Dunn, John Brotchie, John Nicolson, David Box and I, as well as one or two others, me in my office at CSIRO Headquarters t on 19th April 1984 — the day before Good Friday. We agreed to prepare a report in three sections: I would write on the concept; John Brotchie on the economics and market; and John Nicolson on the technology. We all had commitments and agreed it would take six weeks to put a draft together. In the event, we contacted one another on the Tuesday after Easter. Such was our private enthusiasm that each of us had worked right through the break — we had virtually finished the draft!"

The main issues that would be involved in an Australian high-speed railway were predicted in the report, developing the broad concept into a tangible proposal. It was published as *A Proposal for a Fast Railway between Sydney, Canberra and Melbourne*, the first edition of which was published in June 1984 (the second was in 1986).

A copy was sent to Peter Morris, Federal Minister for Transport, on 4 July. On 16 July, the Minister for Science, Barry Jones, enclosed a copy in a letter to the Prime Minister. He observed that the concept would be very valuable in assisting decentralization.

### Federal Government scepticism

A meeting was held on 30 August with the Secretary of the Commonwealth Department of Transport, accompanied by senior officers of his department and the Bureau of Transport Economics (BTE). It was to foreshadow an uneasy relationship that was to continue despite the cooperative attitude of Federal and State Governments in subsequent years. The CSIRO report had been sent to the Minister for Transport, with comments reflecting his officials' opinion: the proposal was not worth considering.

A fundamental mistake of the BTE was to apply the costs for massive earthworks required for conventional low-speed railways to the VFT proposal. Since momentum is proportional to the square of velocity, high-speed trains have considerable ability to climb gradients: therefore, the VFT's maximum gradients would be between 2 and 2½ times steeper than on most conventional railways. The cost of earthworks would therefore be about $800 million[2]; but the BTE's estimate was about $2.8 billion, enough to skew the financial formula significantly. Although the bureau had no firm data on transport markets in south-eastern Australia (which the VFT project would acquire on its own, in 1987–88, at a cost of $1 million), its officials judged passenger fares would need to be set at a rate that would not be commercially viable.

After a meeting with the transport minister on 4 September 1984, Dr Wild decided it was time to speak his mind: he said that "in many areas Australia needed desperately to dig itself out of the stagnation of 19th century thought." He believed the government's reaction highlighted Australia's general malaise and deplored the emphasis on the short term and the preference for patching up decaying and unprofitable systems, ignoring imaginative plans for the future. He called for a much larger, objective investigation by independent experts, including those from overseas countries which already had fast trains, emphasising that he was not seeking government funding for the scheme — merely support for a study that would last 12 months and cost $500,000.

The support resulting from Dr Wild's comments by people in many walks of life greatly encouraged his team.

On 12 September 1984, transport minister Morris answered a Question without Notice in the House of Representatives. Describing the proposal as grandiose, he said that he would not recommend to the Government "that resources should be allocated to even do a study on it."[3]

The CSIRO team could be forgiven for thinking they were owners of an idea with nowhere to go; the rejection had certainly been decisive. And yet, at no stage were they downhearted, such was their confidence in what their studies had revealed.

### Change of fortunes

Paul Wild had no inkling of the complete change of direction that was to come about a week later. He received a telephone call from Sir Peter Abeles, head of the transport giant, TNT, who began: "I think I can help you with a commercial solution to your problem."

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2 Figures are 1985 dollars, but because of reductions in large-scale earthworks costs since then, the figures are also valid in 1990 dollars.

3 House of Representatives *Hansard*, 12 September 1984, page 1119.

A scheme to transform publicly owned railways suddenly developed into a scheme, no less ambitious, that had to return a profit on investment of private capital.

Dr Wild and Sir Peter Abeles were to meet a number of times during the next two years. "Sir Peter clearly had a vision for transforming south-eastern Australia into a much better place — a facet of the VFT that did not catch many people's imagination until long afterwards. He was always supportive, unfailingly cordial, but left it to us to take the next step. He indicated that one or two suitable partners would be needed, and that a Melbourne-based partner would be an advantage," said Dr Wild.

"Frankly, I was looking for *any* suitable partner. Several firms were interested, but it was not until a year later, at lunch on 23 December 1985 with Tony Mitani, head of Kumagai in Australia, that I met a totally enthusiastic supporter. The next day I received a message saying his head office in Tokyo had given the go-ahead to join TNT in backing us."

By then a further report, an aid to presenting the concept to potential joint venture partners, had been prepared by Dale Budd, Canberra-based management consultant and a man whose vast knowledge of railways had been gained from years of study as an enthusiast and transport consultant. It was Dale Budd who was to propose the simple name for the train, the VFT.

The Melbourne link was established after a long wait for an appointment with John Elliott, head of Elders IXL. Dr Wild recalls: "On 12 March 1986, together with John Brotchie, I had a clear hour with him, excluding many interruptions — he was in the throes of a major business transaction at the time. He studied our graphs and figures on rates of return very carefully. In the end he said 'What exactly are you asking for?'"

"I replied, 'Your participation in a pre-feasibility study of the proposal.' 'How much?' was his immediate response. When I told him his share would be $200,000 he simply nodded and said 'Okay — that's on.' And with that we had our third partner."

### *A difference in scale*

On 2 June 1986, harking back to his formative years as a Royal Navy radar officer, Paul Wild reflected on "what Churchill, in another context, called the end of the beginning." On that day, under his chairmanship (he had retired from CSIRO in October 1985), the first management committee meeting of the VFT Joint Venture took place. There were two members each from TNT, Kumagai and Elders IXL. From then on he has believed the project is destined to go ahead.

Events moved quickly, despite a tight budget. An office was set up in Marcus Clarke Street in Canberra's central business district, and the $600,000 pre-feasibility study commenced. John Nicolson attended to project management; Susan Moore managed the finances, public relations and administrative services. A group of top international consultants was engaged to carry out the technical and market analysis. They did so with distinction and in most cases at a financial cost to themselves.

### *The cornerstone is placed*

The pre-feasibility study showed the project to be feasible, both technically and financially.

In August 1987, fourteen months after the Joint Venture was formed, BHP came in strongly as the fourth partner. An earlier approach had not borne fruit, partly because the company was dealing with a possible take-over.

The other three companies were equally keen to have BHP join in. Dr Wild observes "It's a well-balanced consortium. Its composition has stood us in good stead — first during the joint

activity with CSIRO before October 1988, and since then as a completely private enterprise venture. I was very pleased with the outcome — so different from the slender prospects of September 1984."

In September 1987, faced with sketchy data on transport patterns in the nation's busiest corridor, the consortium commissioned a far-reaching passenger market study under the direction of John Brotchie. As in other subjects, the initial CSIRO estimates had been sensibly conservative. An annual passenger demand totalling at least 6.6 million Sydney–Melbourne equivalent single journeys was now predicted.[4]

In September 1988 the joint venture partners, pleased with the results and noting the profitability of high-speed railways now burgeoning overseas, voted $18.9 million to conduct a full feasibility study over 2½ years. Alan Castleman, a BHP general manager, was appointed chief executive to conduct the study. Within the month, CSIRO's involvement had ceased, having successfully started the ball rolling to fix one of Australia's most insidious infrastructure deficiencies.

In mid 1991 the feasibility study will be complete. Then comes the big decision: whether to build one of the largest projects ever planned for Australia. The decision will be based on careful evaluation of the Joint Venture's engineering, financial and environmental studies. It will also depend critically on the attitude and resolve of federal and state governments and the community at large: ultimately on the will of the nation.

How far the challenges will be accepted will depend on how many Australians agree with Dr Wild's contention that "Australia needs desperately to dig itself out of the stagnation of 19th century thought." Many people have already realized that the VFT is not "just another form of transport" and are considering the opportunities this quicker, more reliable and convenient transport will bring — opportunities for technological advancement, economic growth at lowest environmental cost, development of exports, decentralization of our highly urbanised population, and many others. The VFT may well be the greatest catalyst for advancement ever presented to the Australian people.

This issue of *VFT Topics*, based on extensive interviews with Paul Wild, was principally written by Clive Huggan. Material was also contributed by John Nicolson, John Brotchie and others.

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4 Further studies have indicated a probable level of demand of 8.2 million Sydney–Melbourne equivalent single journeys per year.

## Photos and captions

[Photo of XPT with river in background]

*After travelling on this XPT to Sydney in 1983, Dr Paul Wild asked: "Why does such a modern train travel more slowly than the London-Bristol Express of 1851?" Thus the idea of the VFT was born.*

NSW State Rail photo.

[Photo of Paul in front of TGV] *« The one on the track — not the shot in the yard*

*Dr Wild and the latest generation of French electric high-speed trains, the TGV Atlantique, which has travelled at more than 500 km/h.*

John Nicolson photo.

[Group photo of 4] *« Remember to add John Dunn as inset*

*Five members of the original CSIRO team who pioneered the VFT concept: Miss Susan Moore, Dr John Brotchie, Dr Paul Wild and Dr John Nicolson. Inset: Mr John Dunn.*

Clive Huggan photo.

[Maybe route map or one more photo, depending on space]

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Probably not enough room for this, but interesting:

***The event that brought about BHP's renewed interest in joining the joint venture***

On 7 January 1987, a science magazine was on the desk of the principal surveyor of the State Rail Authority of New South Wales. Its leading article was spotted by a visitor — Ian Mackreth, Marketing Executive for BHP Engineering's Wollongong office — who said: "That looks interesting. What's it about?" To which the reply was: "BHP Engineering has been involved in it — didn't you know?"

At BHP's North Sydney office, in a back room, Ian found the project's file, now closed and annotated with a comment that the VFT would not succeed.

With a photocopy of the file in hand he returned to Wollongong, where most of BHP Engineering's heavy railway consulting work originated. Ian says the rest was "just a case of following our imagination." His and his colleagues' enthusiasm prompted an evaluation by the BHP business development group into the VFT's potential impact on BHP's future activities. The results, and the positive findings of the VFT's pre-feasibility study, led to BHP's decision to join the joint venture.